

In agriculture, A.Schulman is the masterbatch pioneer with over 40 years experience

UV-absorbers

UV-stabilisers

IR and NIR fillers

Antidust

Light diffusers

Fluorescence

metallic shading

Antifog

Photomorphogenetic effects

Tailor-made combinations are supplied in customer specific combi-batches

UV- absorbers

Why are UV-absorbers used?

- They can provide UV-protection in combination with UV-stabilisers
- They reduce petal blackening
- They help with Pest control

Which types of UV-absorbers exist?

Hydroxy-Benzophenones

They are the oldest family and primarily used combined with Hals (Polybatch AC 10531 is the absorber alone)

Benzotriazoles

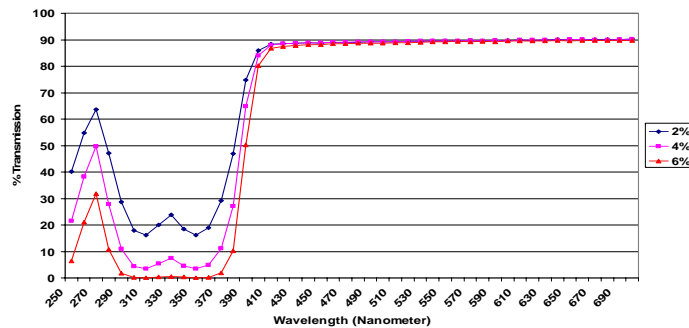
These migrate less to the surface of films (Polybatch UV 1410 f.e. but many combinations with Hals –types exist)

Inorganic absorbers

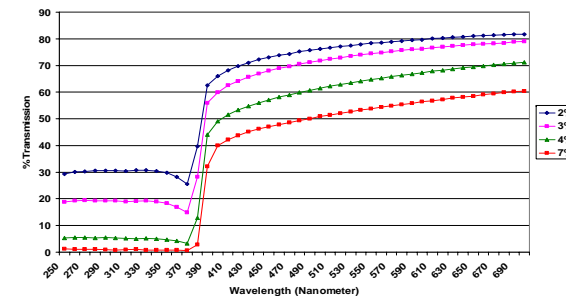
These are often nano-sized fillers so that light transmission remains high. They don't bloc completely.

Certain Triazine structures

These migrate the least and are mostly combined with Hals stabilisers but are very expensive.



Polybatch UV 1410



Polybatch 1402W

Why are roses nearly always grown under UV-block films?

Under certain climatic and light conditions the petals of roses stain darker. This sharply reduces their value.

Filtering out UV-light results in more homogenous coloration. This effect is very typical for red roses such as Baccarah or Mercedes.

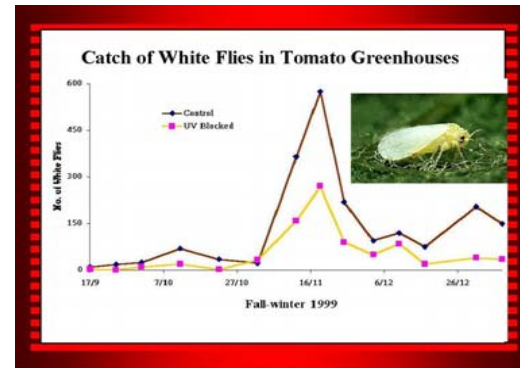


Next to the correct UV-absorber, films need to be thermic by adding Polybatch IR1515. A. Schulman agronomists can advice you on the ideal film structures to use.

The left rose was grown under a UV-block cover

Is it true that UV-block films help to reduce viral diseases carried by Aphids?

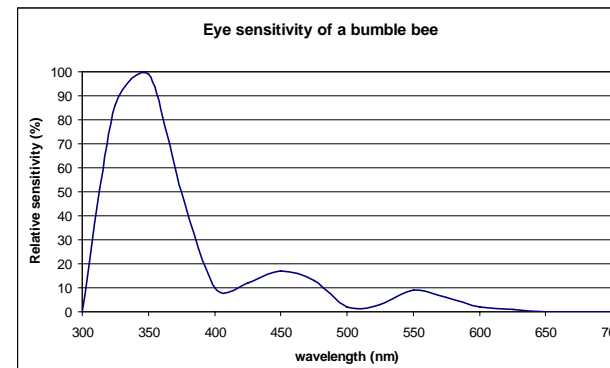
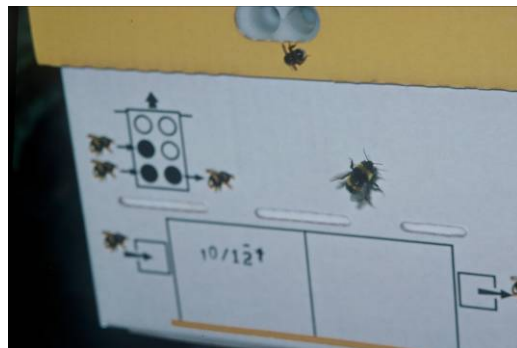
Yes this is true. Many insects see primarily in the UV and blue part of the spectrum. They do not stay completely out of the greenhouse, but infestations are reduced.



(by courtesy of the Israeli Ministry of agriculture)

Is there a risk in blocking UV completely in greenhouse films?

Absolutely. When polination is done with bumble bees, there are strict guidelines to follow so always consult your Schulman specialist. Below is the relative vision of a bumble bee



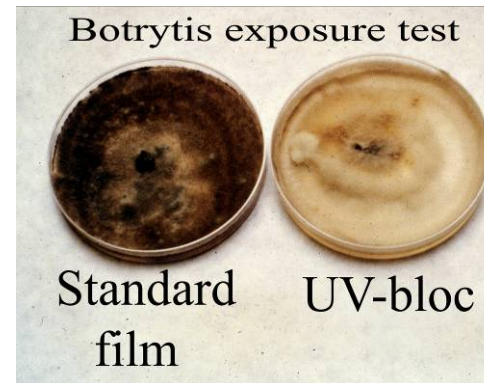
A few years ago in Spain many hectares of melons had no crops due to complete absence of polination. The films had the wrong combination of absorbers and the bees didn't enter the greenhouses.

Are there other advantages to UV-block greenhouse films?

Sporulation of certain fungi like *Botrytis* and *Sclerotinia* is suppressed.

Obviously one must always respect proper hygienic and climatic conditions in the greenhouse.

There furthermore shouldn't be any UV-leaks like through roof ventilation. The best results were obtained in pad-and-fan greenhouse structures.



What about other effects?

Egg-plants grown underneath a UV-bloc film will be substantially lighter in color .

The same goes for other plants with high anthocyanines such as Lollorossa lettuce

This may not be desirable which means one has to weigh the advantages of biological control over other factors such as coloration.

To conclude

A.Schulman offers the most extensive range of masterbatches for agriculture. They are used to manipulate light conditions, influence the climate, reduce or prolonge polymer lifetimes and many other effects so that our growers and farmers can obtain better crops. Feeding the expanding world population will be one of the biggest challenges of the near future. Protected cultivation will help to solve this. Together with our customers, A. Schulman agriculture masterbatches can contribute to a more sustainable world for every one.